REMARKS

Claims 24-39 are rejected. Claims 1-23 and 40 are withdrawn from consideration. Claims 24, 27-32 and 37 have been amended. Claims 1- 40 are presently pending in the application. Favorable reconsideration of the application in view of the following remarks is respectfully requested.

The basis for the amendment of claim 24 is found on pg. 13, lines 9-10 of the specification as originally filed. The basis for the amendment of claim 37 is found in claims 35 and 36 as originally filed.

Restriction under 35 USC § 121:

The Examiner has required restriction to one of the following inventions under 35 U.S.C. § 121: I. Claims 1-23, drawn to a method of preparing polymeric particles with photographic couplers, classified in class 436, subclass 528; II. Claims 24-39, drawn to a polymeric particle, classified in class 436, subclass 56; or III. Claim 40, drawn to an apparatus for use in detecting biological analytes, classified in class 422, subclass 58, indicating that the inventions are distinct, each from the other because, in the instant case, the polymeric particle as recited in Group II does not have to be prepared by a method recited in Group I and it appears that the polymeric particles and the photographic coupler can be prepared in a single solvent, the solvent being a high boiling organic solvent, with reasonable expectation of success. The Examiner also indicates that Inventions III and II are related as subcombinations disclosed as usable together in a single combination and subcombinations are distinct from each other if they are shown to be separately usable as in the instant case, where Group III recites an element comprising a support and a receiving layer and it appears that the receiving layer of the element can be used to support anything capable of fitting inside the receiving layer, not just polymeric particles recited in claim 24.

The Applicants confirm the telephone conversation with Kathleen Neuner Manne on November 1, 2005, in which a provisional election was made with the preservation of right to traverse to prosecute the invention of Group II, claims 24-39. Claim 1 is limited to a method of preparing functionally-active polymeric particles, loaded with photographic couplers and high boiling organic solvent, and attaching biological probes to the functionally active groups on the surfaces of the loaded polymeric particles, not to a method of preparing polymeric

particles with photographic couplers as stated by the Examiner. As indicated by the Examiner, Claim 24 is limited to a loaded polymeric particle having at least one functionally active group that can interact with a biological probe, wherein said polymeric particle is loaded with at least one photographic coupler and said high boiling solvent. Claim 40 is limited to an element comprising the particle of claim 24 on a receiving layer on a support.

The Examiner indicates Group II (claim 24) and Group III (claims 40) are distinct from each other if they are shown to be separately usable as in the instant case, where Group III recites an element comprising a support and a receiving layer and it appears that the receiving layer of the element can be used to support anything capable of fitting inside the receiving layer, not just polymeric particles recited in claim 24. With respect to claims 24 and 40, the difference is the additional support and receiving layer of claim 40. Claim 24 is directed to polymeric particle for use in a microarray and claim 40 is directed to an element for use in detecting biological analytes. Based on the claim language claiming particle for use in a microarray and the element, effectively a microarray, the Applicants do not see a different use, as both claims are directed to microarrays, regardless of what is received by the receiving layer. In addition, commonality exists among the two Groups identified by the Examiner with respect to loaded polymeric particle having at least one functionally active group that can interact with a biological probe, wherein said polymeric particle is loaded with at least one photographic coupler and said high boiling solvent Coextensive searching of the two Groups would not prove seriously burdensome to the Examiner, but would instead be most efficient.

The Examiner also indicates the claims of Group I and Group II are distinct, since the polymeric particle as recited in Group II does not have to be prepared by a method recited in Group I and it appears that the polymeric particles and the photographic coupler can be prepared in a single solvent, the solvent being a high boiling organic solvent, with reasonable expectation of success. As previously stated, Claim 1 is limited to a method of preparing functionally-active polymeric particles, loaded with photographic couplers and high boiling organic solvent, and attaching biological probes to the functionally active groups on the surfaces of the loaded polymeric particles, not to a method of preparing polymeric particles with photographic couplers as stated by the

Examiner. As indicated by the Examiner, Claim 24 is limited to a loaded polymeric particle having at least one functionally active group that can interact with a biological probe, wherein said polymeric particle is loaded with at least one photographic coupler and said high boiling solvent. The Examiner indicates that the polymeric particles and the photographic coupler can be prepared in a single solvent, the solvent being a high boiling organic solvent, with reasonable expectation of success. Inspection of the claims indicates that the coupler and high boiling solvent is loaded into the polymer particles in the method of claim 1 and claim 24 relates to polymeric particles loaded with photographic couplers and high boiling organic solvent. The solvent is not utilized in the preparation of the particles or coupler, but is imbibed into the particle with the coupler. Both claims relate to functionally-active polymeric particles, loaded with photographic couplers and high boiling organic solvent for and attaching biological probes to the functionally active groups on the surfaces of the loaded polymeric particles. The solvent enables the loading of the coupler into the polymeric particle, not the formation of coupler or particle. As both Group I and Group II relate to functionally-active polymeric particles, loaded with photographic couplers and high boiling organic solvent, commonality exists among Groups I and II. Coextensive searching of the two Groups would not prove seriously burdensome to the Examiner, but would instead be most efficient.

Specification:

The serial numbers of the copending applications incorporated into this application by reference have been provided as requested by the Examiner.

Claim Objections:

The Examiner has objected to Claims 27-32 because, in claims 27-29, the words "particles have" should be "particle has" because claim 24 only recites a single particle; in claim 30, the word "surfaces" should be "surface" and the word "particles" should be "particle"; in claim 31, the word "are" should be "is"; and, in claim 32, the word "particles" should be "particle". Claims 27 – 32 have been amended accordingly.

Rejection under 35 USC § 112:

The Examiner has rejected Claim 37 under 35 USC § 112, first paragraph, as failing to comply with the enablement requirement, as Claim 37 cannot depend from claim 35 since the limitations recited in claim 37 contradict

the limitations of claim 35. Claim 37 has been amended to depend from claim 24, making it consistent with claims 35 and 36 as originally filed.

The Examiner has rejected Claims 32, and 33 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, as the limitation "the loaded polymeric particle(s)" recited in Claims 32 and 33 claims has is insufficient antecedent basis. Claim 24 has been amended to include the phrase "loaded polymeric particle" to provide the necessary antecedent basis.

The Examiner has rejected Claim 37 recites the limitation "the dye-forming coupler" in line 1 of the claim. Claim 37 has been amended to replace "the dye-forming coupler" with "photographic coupler", making it consistent with claims 35 and 36 as originally filed.

Rejection Under 35 U.S.C. §103(a):

The Examiner has rejected Claims 24-30, 32-39 under 35 U.S.C. §103(a) as being unpatentable over Fujiwara et al. (U.S. Patent No. 5,238,810) in view of Mihara et al. (U.S. Patent No. 4,331,444), indicating that Fujiwara et al. disclose a method for immunoassay which is accomplished by affixing antibodies/antigens on the surface of non-magnetic carrier particles, the reference discloses that the carrier particles are acrylic particle beads having diameters of 0.1 to 10 micrometers, but the reference does not disclose a photographic coupler or a high boiling solvent. The Examiner continues that Mihara et al. disclose a method for immunoassay using dye-forming couplers in which the immunoassay is conducted by labeling specific antibodies with the dye-forming couplers and allowing the labeled antibodies to react with an analyte of interest, the dye-forming couplers allow visual indication of the detection of the analyte of interest when the reaction product comprising the analyte and the labeled antibody is developed by oxidizing developing agents to form cyan, magenta or yellow dyes, phenol or a naphthol type compounds produce cyan dyes, pyrazolone type compounds form magenta dyes and open chain ketomethylene type compounds form yellow dyes, that the couplers are dissolved in high boiling solvents before the solution is applied to the target substrate or support, and, therefore, it would have been obvious to one of ordinary skill in the art to utilize the dye-forming couplers disclosed by Mihara et al. instead of the magnetic labels and subsequent

laser analysis disclosed by Fujiwara et al. to provide diversity in detection offered by the 3 dye colors.

Fujiwara discloses a laser magnetic immunoassay method utilizing an antigen-antibody reaction and apparatus thereof. More particularly, the invention relates to a laser magnetic immunoassay method which is capable of detecting a specific antibody or antigen in a very small amount of a specimen. The method involves the steps of: affixing an antibody or antigen on the surface of non-magnetic carrier particles; immunoreacting the affixed antibody or antigen to capture a target analyte contained in a specimen; preparing magnetic labeled microparticles treated so as to bind with the target analyte; reacting the labeled complex to sandwich the target analyte between the magnetic particles and the non-magnetic carrier particles; separating the free species from the bound species by centrifugation; dispersing the precipitated solid to make an analyte solution; applying a spot magnetic field gradient on the analyte solution and irradiating a selected spot with a laser beam; and analyzing the resulting interference patterns to quantitatively determine the quantity of target analyte.

Mihara relates to a method for immunologically analyzing trace components, more particularly, to a method for photochemically analyzing in a quantitative manner trace components utilizing immune reaction. In a method for the immunological analysis of trace components by marking or labeling an antigen or antibody with a marker, an immune reaction is caused using an antigen or antibody marked with a fogging agent for silver halide, the labeled antigen or antibody is separated from the labeled antigen-antibody reaction product, the silver halide is developed in the presence of either one of the labeled antigen or antibody and the labeled antigen-antibody reaction product, and the density obtained is measured. The method is comparable to radioimmunoassay in having high reproductibility and sufficient sensitivity but does not involve any risk due to radiation.

The present invention relates to a polymeric particle for use in a microarray comprising a loaded polymeric particle having at least one functionally active group that can interact with a biological probe, at least one photographic coupler, and a high boiling solvent. The polymeric particle is loaded with photographic coupler and high boiling solvent, which are imbibed into the polymeric particle.

To establish a prima facia case of obviousness requires, first, there must be some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references (or references when combines) must teach or suggest all the claim limitations.

As mentioned by the Examiner, Fujiwara does not disclose a photographic coupler or a high boiling solvent. Fujiwara fails to teach or disclose a polymeric particle containing a photographic coupler and a high boiling solvent. Fujiwara also relies on "applying a spot magnetic field gradient on the analyte solution and irradiating a selected spot with a laser beam; and analyzing the resulting interference patterns to quantitatively determine the quantity of target analyte", and therefore fails to teach or disclose the use of visual measurement technique, i.e., the density of developed silver halide. Mihara also fails to teach or suggest a polymeric particle loaded with a photographic coupler and a high boiling solvent. Neither reference discloses a polymeric particle containing a photographic coupler and a high boiling solvent. There is no disclosure or suggestion in a reference utilizing laser magnetic analysis methodology that would lead one of ordinary skill in the art to modify or combine the reference with a methodology for measuring developed silver halide. Therefore, there is no suggestion in either reference, alone or in combination, which would lead one to utilize a polymeric particle containing a photographic coupler and a high boiling solvent in a microarray.

Neither is there any likelihood of success. The Examiner indicates that it would have been obvious to one of ordinary skill in the art to utilize the dye-forming couplers disclosed by Mihara et al. instead of the magnetic labels and subsequent laser analysis disclosed by Fujiwara et al. to provide diversity in detection offered by the 3 dye colors. However, if the couplers disclosed by Mihara were used to replace the magnetic labels of Fujiwara, the resulting coupler-labeled analyte would not be detectable by laser magnetic analysis, making the invention of Fujiwara inoperative. Therefore, the replacement of the magnetic labels by dye-forming couplers would provide no likelihood of success.

As previously discussed, neither reference discloses a polymeric particle containing a photographic coupler and a high boiling solvent. As a result, the references fail to teach all the limitations of the present claims.

In summary, the references fail to contain any suggestion to combine, fail to provide any likelihood of success and fail to disclose all the limitations of the present claims. As a result, the Applicants do not believe that the present claims are obvious with respect to the references, and ask that the Examiner reconsider and withdraw the rejection.

Rejection Under 35 U.S.C. §103(a):

The Examiner has rejected Claim 31 under 35 U.S.C. 103(a) as being unpatentable over Fujiwara et al. in view of Mihara et al. as applied to claim 24, and further in view of Rembaum (US 4,369,226), indicating that Fujiwara et al. in view of Mihara et al. disclose the particle of claim 24, but the references do not explicitly disclose the molecular makeup of the functional groups, however, Rembaum discloses a protein binding substrate in the form of microspheres wherein functional groups in the form of aldehyde groups are disposed on the surface the microspheres, the aldehyde groups bond covalently to antibodies, enzymes and other proteins, and, therefore, it would have been obvious to one of ordinary skill in the art to provide the antibodies/antigens of the modified Fujiwara et al. reference with aldehyde functional groups so that the antibodies/antigens can bind analytes that are complementary to aldehyde groups.

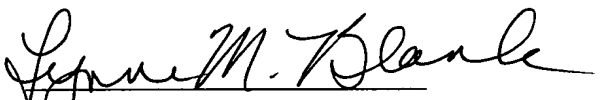
Rembaum discloses the synthesis of polyglutaraldehyde, the conversion of the polymer to a fluorescent form, the binding of proteins to the polymer and the use of the polymer- protein conjugates in biological and chemical research and testing. Polyglutaraldehyde (PGL) is polymerized in aqueous base or in aqueous highly polar solvent basic media to prepare powders, castable films or coatings for substrates such as amine-substituted microbeads. PGL microspheres can be prepared by suspension polymerization in presence of a surfactant or by precipitating PGL from solution containing surfactant. Magnetic PGL microspheres are formed by suspension polymerization in the presence of magnetic particles such as iron oxide. Polyglutaraldehyde can be converted to a fluorescent polymer by reaction with m-aminophenol or other reagent. Proteins can be readily covalently bound to the polyglutaraldehyde. Rembaum fails to

disclose a polymeric particle loaded with a photographic coupler and a high boiling solvent in a microarray.

Claim 31 benefits from dependence on claim 24, which, as discussed above, is believed to be unobvious with respect to the references to Fujiwara and Mihara.

It is believed that the foregoing is a complete response to the Office Action and that the claims are in condition for allowance. Favorable reconsideration and early passage to issue is therefore earnestly solicited.

Respectfully submitted,



Attorney for Applicant(s)
Registration No. 42,334

Lynne M. Blank/ct
Rochester, NY 14650
Telephone: 585-477-7418
Facsimile: 585-477-1148

If the Examiner is unable to reach the Applicant(s) Attorney at the telephone number provided, the Examiner is requested to communicate with Eastman Kodak Company Patent Operations at (585) 477-4656.